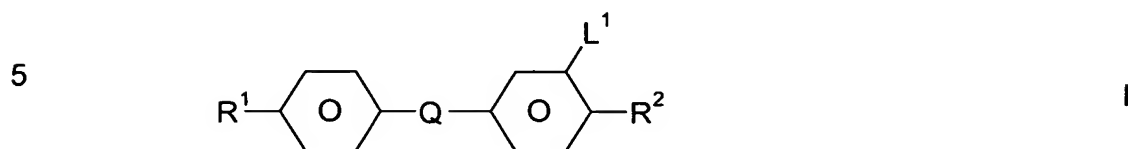


Patent Claims

1. Polymerizable, luminescent compounds of formula I



wherein

10 R^1, R^2 are independently of each other H, halogen, NO_2 , CN, NCS, straight chain, branched or cyclic alkyl with 1 to 25 C-atoms wherein one or more CH_2 groups may also be replaced by $-CO-$, $-O-$, $-S-$, $-NR^0-$, $-CH=CH-$, $-C\equiv C-$ in such a manner that O- and/or S-atoms are not linked directly to one another, and wherein one or more H-atoms may also be replaced by F or Cl, or denotes $P-(Sp-X)_n$,

20 Sp is a spacer group with 1 to 20 C-atoms,

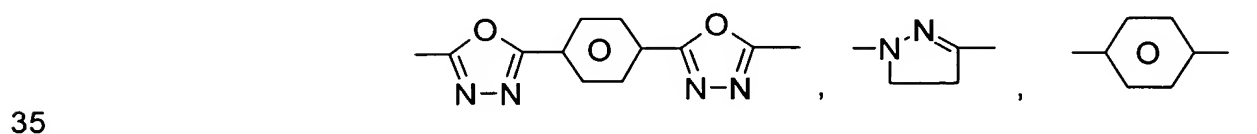
P is a polymerizable group,

25 X is $-O-$, $-S-$, $-CO-$, $-COO-$, $-OCO-$, $-CO-NR^0-$, $-NR^0-CO-$, $-NR^0-$ or a single bond,

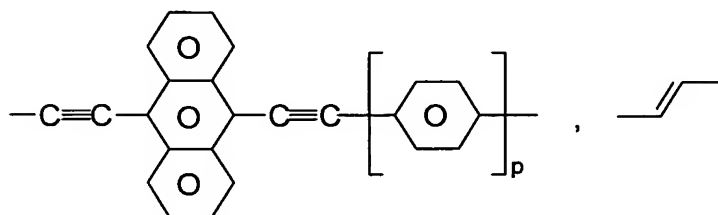
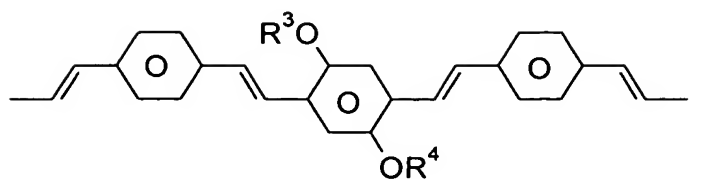
n is 0 or 1,

R^0 is H or alkyl with 1 to 5 C-atoms,

30 Q is one of the following subformulae



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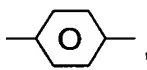
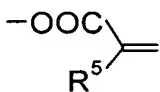
R^3, R^4 are independently of each other straight chain, branched or cyclic alkyl with 1 to 15 C-atoms wherein one or more H-atoms may also be replaced by F or Cl, or denotes $P-(Sp-X)_n$,

p is 0 or 1,

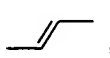
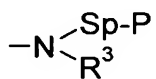
L^1 is H, F or CN

with the proviso that

a) the compounds of formula I contain one, two or more groups $-(X-Sp)_n-P$,

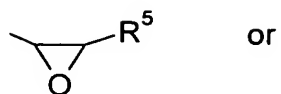
b) if Q denotes , then R^1 is $-O-Sp-P$,
 R^2 is $-CN$, wherein P is not 

with R^5 denoting H, Cl or alkyl with 1 to 5 C-atoms,

c) if Q denotes , then R^1 is  and
 R^2 is $-NO_2$

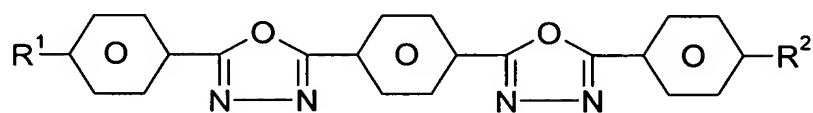
- 48 -

i) wherein P is not $\text{-OOC}\begin{array}{c} \diagup \\ \text{R}^5 \end{array}=\text{}$ and P is not

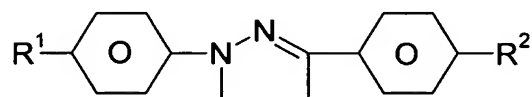


ii) L^1 is F or CN.

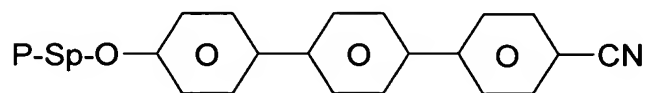
2. Compounds according to claim 1 selected from the following formulae



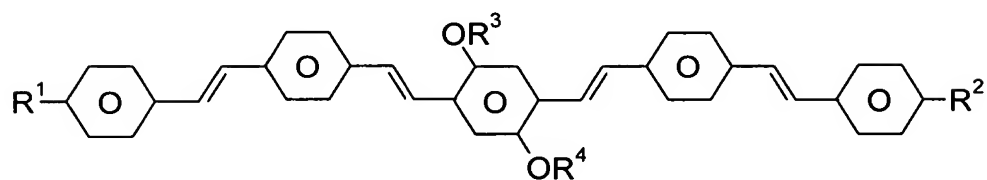
Ia



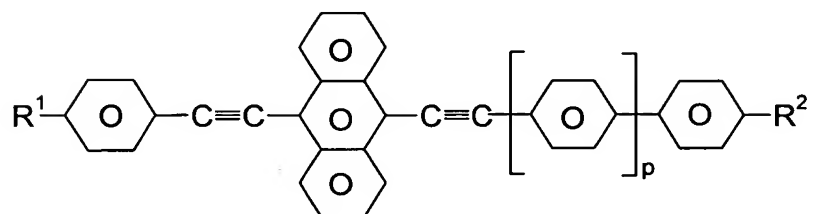
Ib



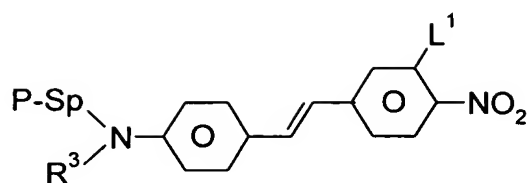
Ic



Id



Ie



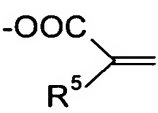
If

5

wherein

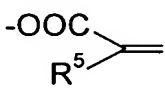
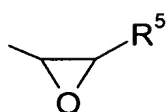
R^1 , R^2 , R^3 , R^4 , P , Sp , L^1 and p are defined as in claim 1 with the proviso that

10

a) in formula Ic P is not  wherein R^5 denotes H, Cl or alkyl with 1 to 5 C-atoms,

15

b) in formula If

i) P is not  and P is not 

20

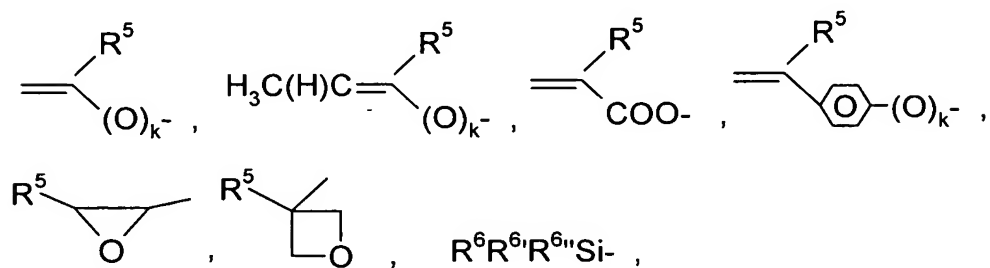
wherein R^5 has the meaning given above or

ii) L^1 is F or CN.

25

3. Compounds according to claim 1 or 2 wherein P is selected from

30



35

wherein

R^5 is H, Cl or alkyl with 1 to 5 C-atoms,

$R^6, R^{6'}, R^{6''}$ are independently of each other -Cl, -O-alkyl and/or
-O-CO-alkyl with alkyl having 1 to 5 C-atoms and

k is 0 or 1.

4. Polymerizable mixture comprising at least one compound according to one of the claims 1 to 3.

5. Polymerizable mixture according to claim 4 further comprising at least one polymerizable mesogenic compound of formula II



wherein

P is a polymerizable group,

Sp is a spacer group having 1 to 20 C-atoms,

X is a group selected from -O-, -S-, -CO-, -COO-, -OCO-,
-O-COO-, -SO₂-O-, -O-SO₂- or a single bond,

n is 0 or 1,

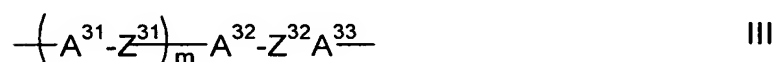
R^{21} is H or an alkyl radical with up to 25 C atoms which may be unsubstituted, mono- or polysubstituted by halogen or CN, it being also possible for one or more non-adjacent CH₂ groups to be replaced, in each case independently from one another, by -O-, -S-, -NH-,
-N(CH₃)-, -CO-, -COO-, -OCO-, -OCO-O-, -S-CO-,

-CO-S- or -C≡C- in such a manner that oxygen atoms are not linked directly to one another, or alternatively R²¹ is halogen, cyano or has independently one of the meanings given for P-(Sp-X)_n,

5 MG is a mesogenic or mesogeneity supporting group.

6. Polymerizable mixture according to claim 5 wherein MG is a mesogenic or mesogeneity supporting group of formula III

10



15

wherein

20

A³¹, A³², A³³ being independently from one another 1,4-phenylene in which, in addition, one or more CH groups may be replaced by N, 1,4-cyclohexylene in which, in addition, one or two non-adjacent CH₂ groups may be replaced by O and/or S, 1,4-cyclohexenylene or naphthalene-2,6-diyl, it being possible for all these groups to be unsubstituted, mono- or polysubstituted with halogen, cyano or nitro groups or alkyl, alkoxy or alkanoyl groups having 1 to 7 C atoms wherein one or more H atoms may be substituted by F or Cl,

25

30

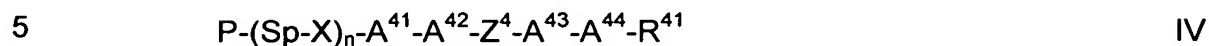
Z³¹, Z³² being independently from one another -O-, -CO-, -COO-, -OCO-, -SO₂-O-, -O-SO₂-, -CH₂CH₂-, -OCH₂-, -CH₂O-, -CH=CH-, -C≡C-, -CH=CH-COO-, -OCO-CH=CH- or a single bond and

m being 0, 1 or 2.

35

7. Polymerizable mixture according to claim 4, 5 or 6 further comprising at least one polymerizable and photoorientable compound.

8. Polymerizable mixture according to claim 7 characterized in that the polymerizable and photoorientable compound is denoted by the formula IV



wherein

10 P is a polymerizable group,

Sp is a spacer group having 1 to 20 C-atoms,

X is a group selected from -O-, -S-, -CO-, -COO-, -OCO-,
15 -O-COO-, -SO₂-O-, -O-SO₂- or a single bond,

n is 0 or 1,

$A^{41}, A^{42}, A^{43}, A^{44}$ are independently of each other 1,4-phenylene, wherein
20 1, 2, 3 or 4 H-atoms may be replaced by F or Cl,

A^{41}, A^{44} may in addition to the above given meaning denote independently of each other a single bond,

25 Z^4 is -N=N-, -CH=CH- or $\text{-(O)}_{s1}\text{-(CH}_2\text{)}_{s2}\text{-O-CO-CH=CH-}$
with s_1 being 0 or 1 and s_2 being 0 to 6,

30 R^{41} is H, halogen, NO₂, CN, SCN, straight chain, branched or cyclic alkyl with 1 to 25 C-atoms wherein one or more CH₂ groups can also be replaced by -O-, -S-, -NR^o-, -CH=CH-, -C≡C- in such a manner that O- and/or S-atoms are not linked directly to one another, and wherein one or more H-atoms can also be replaced by
35 F or Cl, or denotes $P-(\text{Sp-X})_n$.

9. Polymer material obtainable by polymerizing a polymerizable mixture according to one of the claims 4 to 8.
- 5
10. Polymer material according to claim 9 obtainable by a process comprising the following steps
- 10
- a) forming a thin layer of the polymerizable material,
 - b) aligning the molecules of the compounds of the mixture in the thin layer into a uniform orientation or a patterned orientation such that in each pattern the orientation is uniform,
 - c) polymerizing said polymerizable material.
- 15
11. Use of a compound according to one of the claims 1 to 3 or of a polymerizable mixture according to one of the claims 4 to 8 for the manufacture of photoluminescent and/or electroluminescent polymer material.
- 20
12. Use of a polymer material according to claim 9 or 10 as a photo- and/or electroluminescent material in a light emitting device, an optical or electrooptical display element.
- 25
13. Light emitting device comprising a polymer material according to claim 9 or 10 as a photo- and/or electroluminescent material.
- 30
14. Optical or electrooptical display element comprising a polymer material according to claim 9 or 10 as a photo- and/or electroluminescent material.
- 35